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OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER CULLEN, SEAN P	
			ART UNIT 1725	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com  
jarmstrong@oliff.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,859	<b>Applicant(s)</b> KAJIWARA, SHIGETO	
	<b>Examiner</b> Sean P. Cullen, Ph.D.	<b>Art Unit</b> 1725	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-23 and 25-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-23 and 25-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                     |                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                         | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 18, 2010 has been entered.

### ***Status of Claims***

2. Claims 1-14 and 24 are canceled.
3. Claims 15-23 and 25-32 are pending.

### ***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 15-18, 23, 25, 26 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al. (U.S. 2004/0083039 A1) in view of Nonobe et al. (U.S. 5,929,594 A).

Regarding claim 15, Hunt et al. discloses a hybrid fuel cell system (Figs. 1 and 2) comprising:

- a fuel cell (12, Fig. 1; 41, Fig. 2);
- an electric power storage device (32, Figs. 1 and 2);

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- a load portion (see primary loads, [0022]; 44, Fig. 2) which consumes electric power (see supplies current, [0022]); and
- a control portion (37) that is programmed to:
  - compute a supply electric power set value (I REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the electric power storage device (32, [0039]);
  - measure an actual supply electric power value (I HVEC, Fig. 2) indicating an amount of electric power that is actually supplied from the electric power storage device (32, [0047]);
  - determine whether the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, [0047]); and
  - change an amount of electric power (see voltage command, [0047]) after the control portion (37) determines that the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2);
- wherein the control portion (37) is programmed to remove imbalance between charge and discharge (see equilibrium, [0047]) of the electric power storage device (32) in the system (Figs. 1 and 2) by reducing a difference between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

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- a control portion that is programmed to change an amount of electric power consumed by the load portion to increase or decrease consumption
- wherein the control portion is programmed to change the amount of electric power consumed by the load portion to increase or decrease consumption

Nonobe et al. discloses a hybrid fuel cell system (10) comprising a control portion (50) that is programmed to change an amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) to increase or decrease consumption (C14/L50-67) and wherein the control portion (50) is programmed to change the amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) to increase or decrease consumption (C14/L50-67) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Hunt et al. and Nonobe et al. are analogous art because they are directed to hybrid fuel cell systems. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of Hunt et al. with a control portion as taught by Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Regarding claim 16, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the control portion (37) is programmed to obtain the supply electric power set value (I REQ, Fig. 2) based on
  - at least a second supply electric power set value (I FC REQ, Fig. 2)  
indicating an amount of electric power that needs to be supplied from the

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fuel cell (41, [0029]) and

- a consumption electric power set value (I LOAD, [0056]) indicating an amount of electric power that needs to be consumed by the load portion (44, [0056]).

Regarding claim 17, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the load portion (44) includes a system accessory (14, 19, 23, 24, 26, 28, 30 and 36, Fig. 1), and
- the control portion (37) is programmed to obtain the supply electric power set value (I REQ, Fig. 2),
  - using the consumption electric power set value (I LOAD, [0056]) including an amount of electric power consumed by the system accessory (44, [0056]).

Regarding claim 18, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the load portion (44, Fig. 2) includes a drive motor (14, Fig. 1), and
- the control portion (37) is programmed to control an amount of electric power (see voltage command, [0047]) based on the difference between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- wherein the control portion is programmed to control an amount of electric power

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consumed by the drive motor;

Nonobe et al. discloses wherein a control portion (50) is programmed to control an amount of electric power consumed by the drive motor (32, C11/56-C12/L7) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of modified Hunt et al. with the control portion of Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Regarding claim 23, Hunt et al. discloses a hybrid fuel cell system (Figs. 1 and 2) comprising:

- a fuel cell (12, Fig. 1; 41, Fig. 2);
- an electric power storage device (32, Figs. 1 and 2);
- a load portion (see primary loads, [0022]; 44, Fig. 2) which consumes electric power (see supplies current, [0022]);
- a first control portion (37) that is programmed to:
  - compute a supply electric power set value (I REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the electric power storage device (32, [0039]),
  - based on a second supply electric power set value (I FC REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the fuel cell (41, [0029]) and a consumption electric power set value (I LOAD, [0056]) indicating an amount of electric power that needs to be

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consumed by the load portion (44, [0056]); and

- measure an actual supply electric power value (I HVEC, Fig. 2) indicating an amount of electric power that is actually supplied from the electric power storage device (32, [0047]);
- a difference obtaining portion (70) that is programmed to determine whether the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2);
- a second control portion (40) that is programmed to control the amount of electric power (see voltage command, [0047]) based on a difference (HVEC ERROR, Fig. 2) between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2); and
- a computing portion (46) that is programmed to change the amount of electric power (see voltage command, [0047]) after the difference obtaining portion (70) determines that the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2) to remove imbalance between charge and discharge (see equilibrium, [0047]) of the electric power storage device (32) in the system (Figs. 1 and 2) by reducing the difference (HVEC ERROR, Fig. 2) between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- a second control portion that is programmed to control the amount of electric power consumed by the load portion;

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- a computing portion that is programmed to change the amount of electric power consumed by the load portion to increase or decrease consumption;

Nonobe et al. discloses a second control portion (50) that is programmed to control the amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) and a computing portion (50) that is programmed to change the amount of electric power consumed by the load portion to increase or decrease consumption (C14/L50-67) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of Hunt et al. with the control portion and the computing portion of Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Regarding claim 25, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the load portion (44) includes a system accessory (14, 19, 23, 24, 26, 28, 30 and 36, Fig. 1), and
- the first control portion (37) is programmed to obtain the supply electric power set value (I REQ, Fig. 2),
  - using the consumption electric power set value (I LOAD, [0056]) including an amount of electric power consumed by the system accessory (44, [0056])

Regarding claim 26, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

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- wherein the load portion (44, Fig. 2) includes a drive motor (14, Fig. 1), and
- the second control portion (40, Fig. 2) is programmed to control an amount of electric power (see voltage command, [0047]) based on the difference between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- wherein the control portion is programmed to control an amount of electric power consumed by the drive motor;

Nonobe et al. discloses wherein a control portion (50) is programmed to control an amount of electric power consumed by the drive motor (32, C11/56-C12/L7) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of modified Hunt et al. with the control portion of Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Regarding claim 31, claim elements “first control means for obtaining...”, “difference obtaining means for obtaining a difference”, “second control means for controlling...” and “computing means for changing”, are means (or step) plus function limitations that invoke 35 U.S.C.112, sixth paragraph. In the instant specification, “first control means for obtaining...” is positively recited as element (11), “difference obtaining means for obtaining a difference” is positively recited as element (41), “second control means for controlling...” is positively recited as element (12), and “computing means for changing” is positively recited as element (17,

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[0047]).

Regarding claim 31, Hunt et al. discloses a hybrid fuel cell system (Figs. 1 and 2) comprising:

- a fuel cell (12, Fig. 1; 41, Fig. 2);
- an electric power storage device (32, Figs. 1 and 2);
- a load portion (see primary loads, [0022]; 44, Fig. 2) which consumes electric power (see supplies current, [0022]);
- the load portion (44, Fig. 2) including a system accessory device (19, 23, 24, 26, 28, 30 and 36, Fig. 1) other than a main drive motor (14, Fig. 1);
- first control means (37) for;
  - obtaining a supply electric power set value (I REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the electric power storage device (32, [0039]),
  - based on a second supply electric power set value (I FC REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the fuel cell (41, [0029]) and a consumption electric power set value (I LOAD, [0056]) indicating an amount of electric power that needs to be consumed by the load portion (44, [0056]); and
  - measuring an actual supply electric power value (I HVEC, Fig. 2) indicating an amount of electric power that is actually supplied from the electric power storage device (32, [0047]);
- difference obtaining means (70) for determining whether the supply electric

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power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2);

- second control means (40) for controlling the amount of electric power (see voltage command, [0047]) based on a difference (HVEC ERROR, Fig. 2) between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2); and
- computing means (46) for changing an amount of electric power consumed by the system accessory device (36) of the load portion (44, Fig. 1) after the difference obtaining means (70) determines that the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2) to remove imbalance between charge and discharge (see equilibrium, [0047]) of the electric power storage device (32) in the system (Figs. 1 and 2) by reducing the difference (HVEC ERROR, Fig. 2) between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- second control means for controlling the amount of electric power consumed by the load portion

Nonobe et al. discloses a second control means (50) for controlling the amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in

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the art at the time of the invention was to make the hybrid fuel cell system of Hunt et al. with the control means of Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

6. Claims 19-22, 27-30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al. (U.S. 2004/0083039 A1) in view of Nonobe et al. (U.S. 5,929,594 A) and Okhubo et al. (EP 1,220,413 A1).

Regarding claim 19, Hunt et al. discloses a hybrid fuel cell system (Figs. 1 and 2) comprising:

- a fuel cell (12, Fig. 1; 41, Fig. 2);
- an electric power storage device (32, Figs. 1 and 2);
- a load portion (see primary loads, [0022]; 44, Fig. 2) which consumes electric power (see supplies current, [0022]); and
- a control portion (37) that is programmed to:
  - compute a supply electric power set value (I REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the electric power storage device (32, [0039]);
  - measure an actual supply electric power value (I HVEC, Fig. 2) indicating an amount of electric power that is actually supplied from the electric power storage device (32, [0047]);
  - determine whether the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC,

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[0047]); and

- change an amount of electric power (see voltage command, [0047]) after the control portion (37) determines that the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2);
- wherein the control portion (37) is programmed to remove imbalance between charge and discharge (see equilibrium, [0047]) of the electric power storage device (32) in the system (Figs. 1 and 2) by reducing a difference between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- a control portion that is programmed to change an amount of electric power consumed by the load portion to increase or decrease consumption
- wherein the control portion is programmed to change the amount of electric power consumed by the load portion to increase or decrease consumption

Nonobe et al. discloses a hybrid fuel cell system (10) comprising a control portion (50) that is programmed to change an amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) to increase or decrease consumption (C14/L50-67) and wherein the control portion (50) is programmed to change the amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) to increase or decrease consumption (C14/L50-67) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of

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ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of Hunt et al. with a control portion as taught by Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Modified Nonobe et al. does not explicitly disclose:

- a filter that removes a noise component contained in a difference between the supply electric power set value and the actual supply electric power value and that outputs the difference with the noise component removed to the control portion,

Okhubo et al. discloses a filter (80a) that removes a noise component (see integrating, [0014]) to measure the charging/discharging current accurately and further the battery capacity highly precisely [0014]. Hunt et al. and Okhubo et al. are analogous art because they are directed to controlling the charging and discharging of rechargeable batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make hybrid fuel cell system of modified Hunt et al. with the filter of Okhubo et al. to accurately measure the charging/discharging current and the battery capacity.

Regarding claim 20, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the control portion (37) is programmed to obtain the supply electric power set value (I REQ, Fig. 2) based on
  - at least a second supply electric power set value (I FC REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the fuel cell (41, [0029]) and
  - a consumption electric power set value (I LOAD, [0056]) indicating an

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amount of electric power that needs to be consumed by the load portion (44, [0056]).

Regarding claim 21, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the load portion (44) includes a system accessory (14, 19, 23, 24, 26, 28, 30 and 36, Fig. 1), and
- the control portion (37) is programmed to obtain the supply electric power set value (I REQ, Fig. 2),
  - using the consumption electric power set value (I LOAD, [0056]) including an amount of electric power consumed by the system accessory (44, [0056]).

Regarding claim 22, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the load portion (44, Fig. 2) includes a drive motor (14, Fig. 1), and
- the control portion (37) is programmed to control an amount of electric power (see voltage command, [0047]) based on the difference between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- wherein the control portion is programmed to control an amount of electric power consumed by the drive motor;

Nonobe et al. discloses wherein a control portion (50) is programmed to control an

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amount of electric power consumed by the drive motor (32, C11/56-C12/L7) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of modified Hunt et al. with the control portion of Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Regarding claim 27, Hunt et al. discloses a hybrid fuel cell system (Figs. 1 and 2) comprising:

- a fuel cell (12, Fig. 1; 41, Fig. 2);
- an electric power storage device (32, Figs. 1 and 2);
- a load portion (see primary loads, [0022]; 44, Fig. 2) which consumes electric power (see supplies current, [0022]),
- the load portion (44, Fig. 2) including a system accessory device (19, 23, 24, 26, 28, 30 and 36, Fig. 1) other than a main drive motor (14, Fig. 1); and
- a control portion (37) that is programmed to:
  - compute a supply electric power set value (I REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the electric power storage device (32, [0039]);
  - measure an actual supply electric power value (I HVEC, Fig. 2) indicating an amount of electric power that is actually supplied from the electric power storage device (32, [0047]);
  - determine whether the supply electric power set value (I REQ, Fig. 2) is

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greater than or less than the actual supply electric power value (I HVEC, [0047]); and

- change an amount of electric power (see voltage command, [0047]) after the control portion (37) determines that the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2);
- a computing portion (46) that is programmed to change an amount of electric power consumed by the system accessory device (36) of the load portion (44, Fig. 1) after the difference obtaining means (70) determines that the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2) to remove imbalance between charge and discharge (see equilibrium, [0047]) of the electric power storage device (32) in the system (Figs. 1 and 2) by reducing the difference (HVEC ERROR, Fig. 2) between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- a control portion that is programmed to change an amount of electric power consumed by the load portion to increase or decrease consumption

Nonobe et al. discloses a hybrid fuel cell system (10) comprising a control portion (50) that is programmed to change an amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) to increase or decrease consumption (C14/L50-67) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from

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excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of Hunt et al. with a control portion as taught by Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Modified Hunt et al. does not explicitly disclose:

- a filter that removes a noise component contained in a difference between the supply electric power set value and the actual supply electric power value, and that outputs the difference with the noise component removed to the control portion;

Okhubo et al. discloses a filter (80a) which removes a noise component (see integrating, [0014]) to measure the charging/discharging current accurately and further the battery capacity highly precisely [0014]. Hunt et al. and Okhubo et al. are analogous art because they are directed to controlling the charging and discharging of rechargeable batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make hybrid fuel cell system of modified Hunt et al. with the filter of Okhubo et al. to accurately measure the charging/discharging current and the battery capacity.

Regarding claim 28, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the control portion (37) is programmed to obtain the supply electric power set value (I REQ, Fig. 2) based on
  - at least a second supply electric power set value (I FC REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the

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fuel cell (41, [0029]) and

- a consumption electric power set value (I LOAD, [0056]) indicating an amount of electric power that needs to be consumed by the load portion (44, [0056]).

Regarding claim 29, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the load portion (44) includes a system accessory (14, 19, 23, 24, 26, 28, 30 and 36, Fig. 1), and
- the control portion (37) is programmed to obtain the supply electric power set value (I REQ, Fig. 2),
  - using the consumption electric power set value (I LOAD, [0056]) including an amount of electric power consumed by the system accessory (44, [0056]).

Regarding claim 30, modified Hunt et al. discloses all claim limitations set forth above and further discloses a hybrid fuel cell system:

- wherein the load portion (44, Fig. 2) includes a drive motor (14, Fig. 1), and
- the control portion (37) is programmed to control an amount of electric power (see voltage command, [0047]) based on the difference between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- wherein the control portion is programmed to control an amount of electric power

consumed by the drive motor;

Nonobe et al. discloses wherein a control portion (50) is programmed to control an amount of electric power consumed by the drive motor (32, C11/56-C12/L7) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was to make the hybrid fuel cell system of modified Hunt et al. with the control portion of Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Regarding claim 32, Hunt et al. discloses a hybrid fuel cell system (Figs. 1 and 2) comprising:

- a fuel cell (12, Fig. 1; 41, Fig. 2);
- an electric power storage device (32, Figs. 1 and 2);
- a load portion (see primary loads, [0022]; 44, Fig. 2) which consumes electric power (see supplies current, [0022]),
- the load portion (44, Fig. 2) including a system accessory device (19, 23, 24, 26, 28, 30 and 36, Fig. 1) other than a main drive motor (14, Fig. 1); and
- a control portion (37) that is programmed to:
  - compute a supply electric power set value (I REQ, Fig. 2) indicating an amount of electric power that needs to be supplied from the electric power storage device (32, [0039]);
  - measure an actual supply electric power value (I HVEC, Fig. 2) indicating an amount of electric power that is actually supplied from the electric

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power storage device (32, [0047]);

- determine whether the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, [0047]); and
- change an amount of electric power (see voltage command, [0047]) after the control portion (37) determines that the supply electric power set value (I REQ, Fig. 2) is greater than or less than the actual supply electric power value (I HVEC, Fig. 2);
- computing means (46) for changing an amount of electric power consumed by the system accessory device (36) of the load portion (44, Fig. 1) to remove imbalance between charge and discharge (see equilibrium, [0047]) of the electric power storage device (32) in the system (Figs. 1 and 2) by reducing the difference (HVEC ERROR, Fig. 2) between the supply electric power set value (I REQ, Fig. 2) and the actual supply electric power value (I HVEC, Fig. 2).

Hunt et al. does not explicitly disclose:

- a control portion that is programmed to change an amount of electric power consumed by the load portion to increase or decrease consumption

Nonobe et al. discloses a hybrid fuel cell system (10) comprising a control portion (50) that is programmed to change an amount of electric power consumed by the load portion (32 and 34, C11/L56-C12/L7) to increase or decrease consumption (C14/L50-67) in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading (C2/L18-24). Therefore, it would have been obvious to one of ordinary skill in

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the art at the time of the invention was to make the hybrid fuel cell system of Hunt et al. with a control portion as taught by Nonobe et al. in order to prevent the remaining charge of a battery from decreasing to a critical level and protect fuel cells from excess loading.

Modified Hunt et al. does not explicitly disclose:

- a filter which removes a noise component contained in the difference between the supply electric power set value indicating the amount of electric power which needs to be supplied from the electric power storage device and the actual supply electric power value indicating an amount of electric power which is actually supplied from the electric power storage device, and which outputs the difference with the noise component removed to the control portion; and

Okhubo et al. discloses a filter (80a) which removes a noise component (see integrating, [0014]) to measure the charging/discharging current accurately and further the battery capacity highly precisely [0014]. Hunt et al. and Okhubo et al. are analogous art because they are directed to controlling the charging and discharging of rechargeable batteries. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make hybrid fuel cell system of modified Hunt et al. with the filter of Okhubo et al. to accurately measure the charging/discharging current and the battery capacity.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 15-23 and 25-32 have been considered but are moot in view of the new ground(s) of rejection.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Cullen, Ph.D. whose telephone number is 571-270-1251. The examiner can normally be reached on Monday thru Thursday 6:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on 571-272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/S. P. C./  
Examiner, Art Unit 1725

/Robert Hodge/  
Primary Examiner, Art Unit 1729